REMARKS

Applicant appreciates the continued careful analysis of the application by the Examiner, and now responds to the non-final Office Action mailed November 20, 2007. By this submission, claims 1, 4, 6-7, 13, 20, and 25-28 are currently amended, while claims 14-19 and 21 are previously presented. Further, claims 2-3, 5, 8-12, and 22-24 are canceled, while claims 29-35 are newly presented. Support for the new claims and amendments is found in Fig. 3 of Applicant's drawings and corresponding description at page 7, line 3 through page 8, line 20 of Applicant's specification.

Claims 1, 4, 6-7, 13-21, and 25-35 are currently pending. Applicants respectfully request reconsideration and allowance of this application in view of the following comments and the pending claims.

35 U.S.C §103(a)

Claims 1, 3-7, 9-10, and 13-28 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Motley, U.S. Patent 3,931,584 ("Motley") in view of Applicant's Fig. 1 and corresponding discussion from Applicant's disclosure. Applicant would like to address several ongoing points related to the Motley reference with respect to previous arguments made as well as with respect to the present claim amendments.

"DIRECT"

The first issue raised is whether Motley discloses that the binary output of the analog-to-digital circuitry directly feeds and/or controls the adjustable gain control circuitry in the various exemplary embodiments of the present invention as claimed. The Examiner maintains that all the elements contained within the dotted lines forming box 17 in Motley comprise an automatic gain control ("AGC"), and that hence, the output of the sampler 19 directly controls the AGC.

Applicant respectfully disagrees with the Examiner as to this point. As was argued in the remarks accompanying the RCE submitted on October 6, 2007, Motley was taking the liberty of acting as his own lexicographer to label what could be called an "AGC module" (having various components) as an ACG itself. That is to say, Motley includes several various accessory components implementing the functionality of his invention in box 17 and calls it an AGC. As

there are intervening components between the sampler 19 and the AGC 29 in Motley, Applicant assert that the output of the sampler 19 does not directly control the AGC 29, and the reference does not disclose this feature.

There is support for Applicant's position in the disclosure of Motley itself. Initially, it is clearly seen that in Fig. 3, there exist two components labeled AGC, one being coarse (reference numeral 27) and the other being fine (reference numeral 29). One skilled in the art recognizes that the actual gain controls in the figure are these two items and not the overall module that is enclosed in box 17. At column 4, lines 61-62, Motley states that, "The AGC 17 of the present invention includes a coarse AGC 27 of the **conventional type**." (emphasis added) Motley must have understood that his automatic gain control 17 was really not the conventional type but was comprised of various components of the conventional type to form a new AGC module.

There is additional support for Applicant's position. As previously argued, one skilled in the art would not consider a counter such as that depicted by reference numeral 59 in Motley to be part of an AGC. This item is simply what is necessary to implement in Motley what is essentially statistical analysis being performed on the output of the sampler 19. See Motley, column 7, lines 49-52. Embodiments of the present invention are different from Motley in that when the binary output of the analog-to-digital circuitry reaches certain threshold levels as reflected in changes in bit values, a change in the gain is made. As previously argued, the idea of a counter runs in opposition to exemplary embodiments of the present invention which describes changes in particular bits directly resulting in changes in gain. The notion of counting as disclosed in Motley is not considered in the exemplary embodiments of the present invention.

While the Examiner is entitled to the broadest interpretation of a reference as is reasonable, there are limits. Due to the presence of intervening components, Motley cannot reasonably be viewed as disclosing direct control as claimed by Applicant. Applicant asserts that independent claims 1, 7, and 13 are allowable for at least this reason.

GAIN ADJUSTMENT

Each of the independent claims is currently amended to recites features similar to those of amended claim 1, which recites:

"wherein the gain is adjusted by a first amount responsive to a first bit selected from a plurality of most significant bits in the bit signal, the first bit indicating that the analog-to-digital circuitry has exceeded a first threshold,

wherein the gain is adjusted by a second amount, responsive to a first set of bits selected from the plurality of most significant bits in the bit signal, the first set of bits indicating that the analog-to-digital circuitry has exceeded a second threshold,

wherein the first amount is not equal to the second amount, and
wherein the first threshold is not equal to the second threshold."

Motley does not discuss or suggest these features as is now described. Initially, Applicant believes there has been a fair amount of confusion regarding the term "threshold" in the prosecution of the instant application. Applicant asserts that this is in part due to the fact that Motley uses this term in at least two different ways in his disclosure. The first way it is used relates to the power level of digital signals represented by binary values. In Motley when an analog signal is sampled, it is controlled so that the signal is rounded up or down to a binary value that Motley calls a threshold. See Motley, column 5, lines 12-25. Motley thus explains that there are +/- 511 different threshold levels in a ten digit binary number.

The second way Motley uses the term "threshold" relates to the threshold count that serves as an input to comparator 61. This threshold count is compared with the number of occurrences of a particular binary sequence in a given interval of time. The example provided in Motley relates to the number of occurrences of a ONE-ZERO or ZERO-ONE combination in the sign bit and most significant bit held in register 20. See Motley at column 8, lines 6-10. The actual number of occurrences of the above-mentioned combination is compared with a base threshold count.

Neither use of the term threshold in Motley adequately anticipates the features recited in Applicant's claims. In each of independent claims 1, 7, and 13, gain is adjusted by a first and second amount in response to a bit or set of bits which indicates that a threshold has been reached. The threshold recited in the claims relates to whether a particular bit or set of bits has achieved a particular value as is illustrated in the present application by Fig. 3 and described in the corresponding discussion.

In some previous discussions of this subject, the Examiner has referred to Motley as achieving certain thresholds by indicating that Motley can control gain by +-3 db and +-.5 db.

This appears to relate to the use of threshold as described in the first scenario above. That is to say, the normal gain control is used in Motley achieve the "thresholds" illustrated by lines 33 in Fig. 4. This is not similar to the threshold indicated by the binary values of the bits in the present application.

As argued previously by Applicant, the alternative use of threshold relates to the counting process that occurs over several clock cycles. In particular, the threshold count may be compared with a count provided by counter 59 from over 1000 samples from the sampler 19 over a particular interval. See Motley at column 8, lines 11-25. Thus the threshold count described by Motley is not indicated by particular bits or set of bits but rather is simply a comparison to a count of the bit values over time.

Although Applicant believes that previous sets of claims have recited patentably distinct claims over the prior art, in order to expedite prosecution, Applicant has amended the independent claims further such that not only is a gain adjusted by an amount, responsive to a bit indicating that analog-to-digital circuitry has exceeded a threshold but also that gain is adjusted a second amount when the analog-to-digital circuitry exceeds a second threshold. There is simply nothing in the Motley reference that could reasonably be interpreted as describing this feature.

To establish a prima facie case of obviousness, the prior art reference or references must teach or suggest all the claim limitations. Applicant asserts that Motley, either alone or in combination with Fig. 1 of Applicant's drawings and corresponding discussion from Applicant's specification, does not teach the features described above. Applicant asserts that claims 1, 7, and 13 are allowable for at least this reason.

The remaining dependent claims, not specifically discussed herein, are viewed as allowable for at least their dependencies from claims 1, 7, and 13 and/or for the further features recited therein.

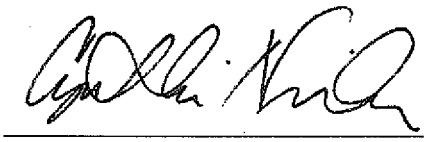
CONCLUSION

In view of the foregoing, the applicant submits that this application is in condition for allowance. A timely notice to that effect is respectfully requested. If questions relating to patentability remain, the Examiner is invited to contact the undersigned by telephone.

If there are any problems with the payment of fees, please charge any underpayments and credit any overpayments to Texas Instruments Incorporated's Deposit Account No. 20-0668.

This Amendment is submitted by the undersigned registered patent attorney in accordance with 37 CFR 1.34.

Respectfully submitted,



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